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Two new record species of *Prochiloneurus* Silvestri, 1915 from China (Hymenoptera: Encyrtidae)

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Abstract: Two species of *Prochiloneurus* Silvestri, 1915 (Hymenoptera: Encyrtidae), *Prochiloneurus agarwali* Hayat, 1981 and *Prochiloneurus javanicus* (Ferrière, 1951), are recorded from China for the first time. Detailed morphological descriptions, host records, and distributional data are provided for both species, along with a key to the females of Chinese species of this genus.

Keywords: Chalcidoidea, Oriental Region, parasitoids, taxonomy

中国原长缘跳小蜂属二新纪录种记述（膜翅目：跳小蜂科）

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摘要：报道了原长缘跳小蜂属二个中国新纪录种——阿加瓦原长缘跳小蜂 *Prochiloneurus agarwali* Hayat, 1981 和爪哇原长缘跳小蜂 *Prochiloneurus javanicus* (Ferrière, 1951)。详细记述了新纪录种的形态特征、寄主和分布情况，并提供了该属中国种类的雌虫分种检索表。

关键词：小蜂总科，东洋区，寄生蜂，分类学

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Introduction

The genus *Prochiloneurus* was established by Silvestri (1915) based on the type species *P. pulchellus* Silvestri, 1915. Species of this genus are usually the secondary parasitoids of mealybugs (Hemiptera: Pseudococcidae) via some encyrtids (Hymenoptera: Encyrtidae), such as *Anagyrus* Howard, 1896 (Andreason *et al.* 2019), *Aenasius* Walker, 1846 (Wang *et al.* 2014), *Leptomastix* Föerster, 1856 (Hayat 2006); one of them may also act a secondary parasitoid of ladybirds (Coleoptera: Coccinellidae) (Trjapitzin 1989). *Prochiloneurus* is morphologically close to *Cheiloneurus* Westwood, 1833, but can be distinguished from the latter by the combined characteristics: the hypopygium extending to the apex of the gaster, the ovipositor obviously exserted, and the apex of gaster rounded. *Prochiloneurus* is a cosmopolitan genus and currently contains 42 species (Noyes 2023), and five species, *viz. P. io* (Girault, 1920), *P. nagasakiensis* (Ishii, 1928), *P. nigricornis* (Girault, 1920), *P. stenopterus* Wang, Huang & Xu, 2014, and *P. bolivari* Mercet, 1919, have been recorded from China (Wang *et al.* 2014; Yang *et al*. 2019).

In this paper, we reported two new country record species from China, *i.e.*, *Prochiloneurus agarwali* Hayat, 1981 and *Prochiloneurus javanicus* (Ferrière, 1951), and provided a key to females of Chinese *Prochiloneurus* species.

Material and methods

Specimens were collected from Qinzhou City, Guangxi Zhuang Autonomous Region, China, using Malaise traps from May to October 2019. They were then dissected and mounted on slides following the method given by Noyes (1982). Body lengths were measured with a Motic SMZ-168 stereomicroscope, other measurements were made with a Motic BA210E optical microscope equipped with a micrometer.

All specimens are deposited in the insect collection of Tianjin Agricultural University, China (Guo-Hao Zu).

Key to species of *Prochiloneurus* from China (females)

1. Scutellum with a tuft of black bristles near apex (*e.g.* Fig. 2-C) **2**

Scutellum with scattered hairs near apex (*e.g.* Fig. 1-C) **3**

2. Antenna with funicle pale white and clava dark to black ..... ***P. nagasakiensis* (Ishii)**

Flagellum unicolorous brown or black **4**

3. Body mostly yellow to brown and dark brown. Fore wing short and narrow, not projecting beyond apex of metasoma ..... ***P. stenopterus* Wang, Huang & Xu**

Body mostly dark **5**

4. Exserted part of ovipositor 0.27× as long as metasoma (Fig. 2-C) ..... ***P. javanicus* (Ferrière)**

Exserted part of ovipositor 0.67× as long as metasoma ..... ***P. nigricornis* (Girault)**

5. Distal funicle segment black ..... ***P. bolivari* (Mercet)**

Distal funicle segment white **6**

6. Exserted part of ovipositor 0.29× as long as metasoma (Fig. 1-C) ..... ***P. agarwali* Hayat**

Exserted part of ovipositor 0.75× as long as metasoma ..... ***P. io* (Girault)**

Prochiloneurus agarwali Hayat, 1981 阿加瓦原长缘跳小蜂

Fig. 1

Prochiloneurus albifuniculus Shafee, Alam & Agarwal, 1975: 52 [**type locality:** Giddalur, Kurnool, Andhra Pradesh, India].

Prochiloneurus agarwali Hayat, 1981: 23 [replacement name for *P. albifuniculus* Shafee *et al.*, preoccupied by *P. albifuniculus* (Hayat *et al.*, 1975)].

Prochiloneurus kurnoolensis Shafee, 1984: 39 [unnecessary replacement name]. Synonymized by Hayat 1999: 390.

Prochiloneurus pantnagarensis Sunita & Khan, 2011 [**type locality:** Pantnagar, U. S. Nagar, Uttarakhand, India]. Synonymized by Hayat 2016: 126.

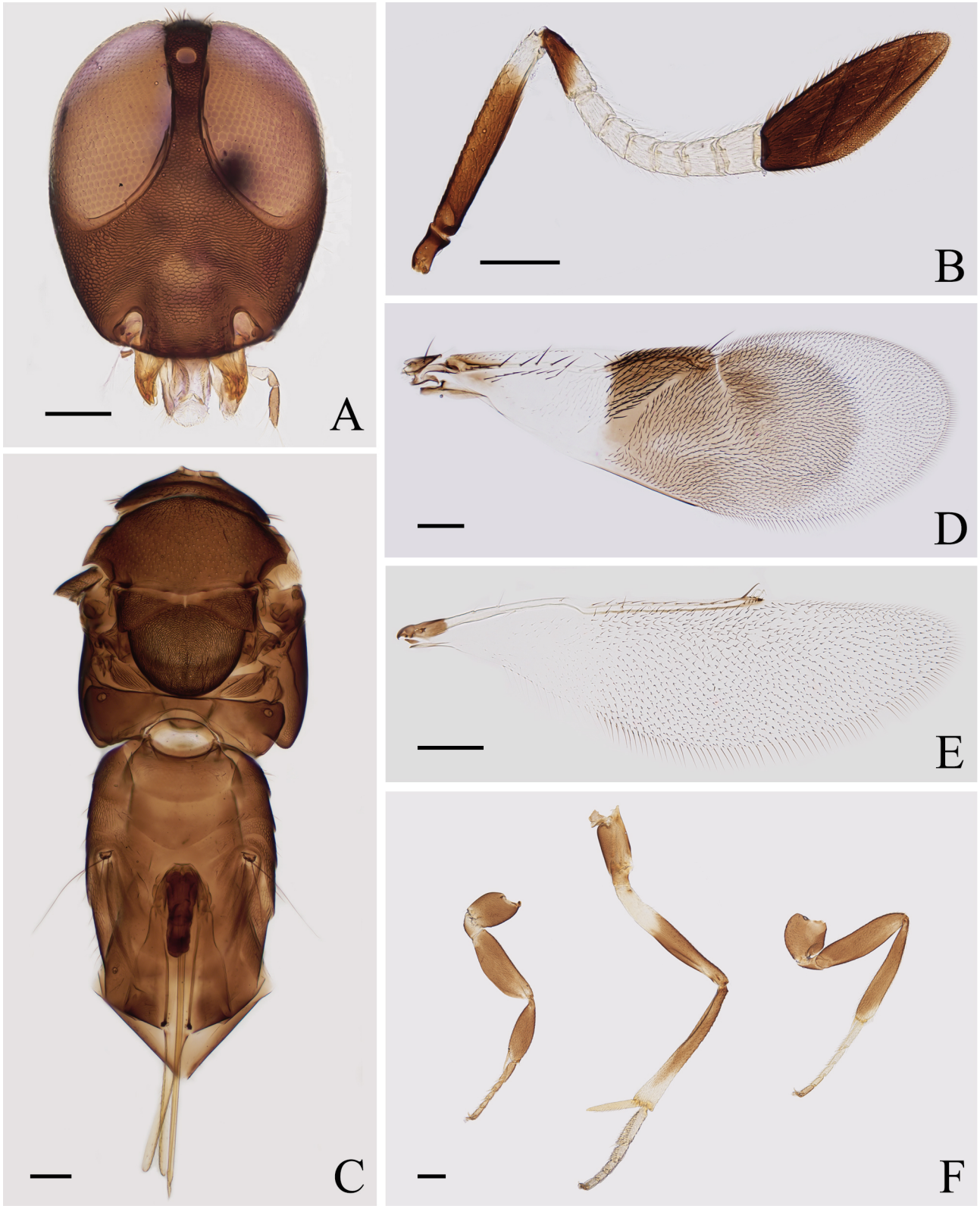

FIGURE 1. *Prochiloneurus agarwali* Hayat, 1981: **A** head **B** antenna **C** thorax and abdomen **D** fore wing **E** hind wing **F** fore leg, mid leg and hind leg (from left to right). Scale bars = 0.1 mm.

Material examined: 2♀♀: South Gate of Beibu Gulf University, Qinzhou City, Guangxi Zhuang Autonomous Region, China, 02.V.2019–11.V.2019, Wen-Quan Zhen leg.; 1♀: same data but 22.VII.2019–24.VIII.2019; 2♀♀: same data but 21.XI.2019–01.XII.2019.

Diagnosis. Female. (length about 1.10–1.40 mm). Head black, with dark blue-green metallic luster; antenna (Fig. 1-B) with scape black, apical 1/4 white; pedicel black, dorsal margin of the apex white; all funicle white; clava black; thorax black, mesopleuron with strong blue metallic luster; fore wing (Fig. 1-D) with a hyaline band behind the postmarginal vein, hyaline apex of fore wing about as wide as length of marginal vein; gaster mostly black; head (Fig. 1-A) about 1.00–1.24× as long as broad and 7.30–8.33× as wide as frontovertex, head relatively longer and frontovetex narrower; scape (Fig. 1-B) cylindrical, about 5.75–6.59× as long as broad, mesoscutum (Fig. 1-C) densely setose; fore wing (Fig. 1-D) 2.66–2.93× as long as broad; line of setae on ventral surface of costal cell of fore wing virtually absent above parastigma; exserted part of ovipositor 0.29–0.35× as long as gaster.

Male. Unknown.

Host. Hyperparasitic host: Pseudococcidae: *Nipaecoccus vastator* (Maskell, 1895), *N. viridis* (Newstead, 1894) (Hayat 1986), *Maconellicoccus hirsutus* (Green, 1908) (Nalini & Manickavasagam 2011), *Phenacoccus Solenopsis* (Tinsley, 1898) (Nalini & Manickavasagam 2011). Primary host: Unknow.

Distribution. China (Guangxi) **[new record]**, India (Andhra Pradesh, Tamil Nadu) (Sunita & Khan 2011).

***Prochiloneurus javanicus* (Ferrière, 1951)** 爪哇原长缘跳小蜂

Fig. 2

Achrysopophagus javanicus Ferrière, 1951: 188 [type locality: Batavia, Java, Indonesia].

Prochiloneurus javanicus (Ferrière): Noyes & Hayat 1984: 327.

Material examined. 2♀♀: **CHINA**: Guangxi Zhuang Autonomous Region, Qinzhou City, South Gate of Beibu Gulf University, 06.X.2019–13.X.2019, Wen-Quan Zhen leg., collected by Malaise trapping.

Diagnosis. Female (length 1.38 mm): head dark brown with a blue metallic luster; antenna (Fig. 2-B) dark brown, scape distal one-third white; thorax dark brown, mesoscutum and scutellum with a strong metallic blue-green; mesopleuron and propodeum with metallic blue sheen, fore wing without a line of setae below proximal half of parastigma but with a group of about 15 pale setae below distal half; hyaline apex of fore wing about as wide; fore wing with a distinct subapical band of paler setae; gaster dark brown with a metallic blue; head (Fig. 2-A) 1.10× as long as broad and 6.67× as wide as frontovertex, head approximately circular and frontovertex narrower; scape cylindrical (Fig. 2-B) 5.07× as long as broad, mesoscutum anteriorly with obliquely elongate striate-reticulate sculpture that contrasts with the more regular polygonally reticulate sculpture posteriorly; scutellum with polygonally reticulate sculpture; forewing (Fig. 2-D) 2.68× as long as broad; exserted part of ovipositor 0.27× as long as gaster.

Male. Unknown.

Host. Hyperparasitic host: *Maconellicoccus hirsutus* (Green, 1908), *Phenacoccus hirsutus* (Green, 1908) (Hemiptera: Pseudococcidae) (Herting 1972). Primary host: Encyrtidae: *Anagyrus kamali* Moursi, 1948 (Sureshan & Narendran 2005).

Distribution. China (Guangxi) **[new record]**, Egypt, Indonesia (Herting 1972), India (Andhra Pradesh, Kerala, Maharashtra) (Sureshan & Narendran 2005).

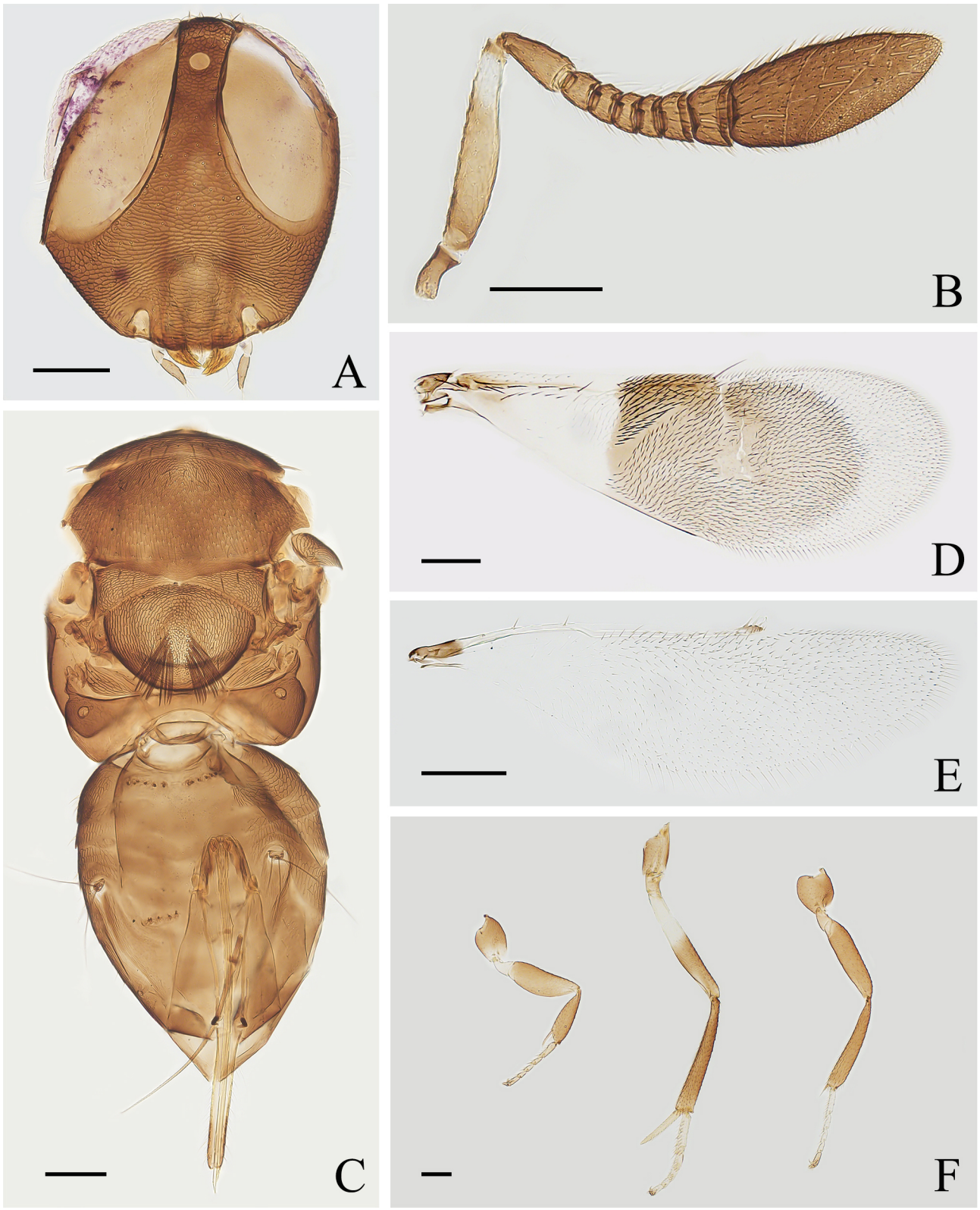

FIGURE 2. *Prochiloneurus javanicus* (Ferrière, 1951): **A** head **B** antenna **C** thorax and abdomen **D** fore wing **E** hind wing **F** fore leg, mid leg and hind leg (from left to right). Scale bars = 0.1 mm.

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